Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Unconventional superconductivity and interaction induced Fermi surface reconstruction in the two-dimensional Edwards model DAI-NING CHO, STEFFEN SYKORA, IFW Dresden — We study the possibility of unconventional superconducting pairing in the framework of a novel two-dimensional quantum transport model, where the charge carriers are strongly affected by the correlations and fluctuations of a background medium, described by bosonic degrees of freedom. Using the projective renormalization method (PRM) we find in the half-filled band case an interplay between stable superconducting solutions and a charge-density wave order parameter which determines the ground state in the limit of large bosonic energies. The superconducting pairing mainly appears on a new hole-like Fermi surface, which is formed nearby the center of the Brillouin zone due to strong renormalization of the original fermionic band. In the superconducting state, the Fermi surface splits into two disconnected parts, which are characterized by different sign of the superconducting order parameter.

Dai-Ning Cho
IFW Dresden

Date submitted: 05 Nov 2015 Electronic form version 1.4